

GEDI Version 2 Spatial Querying and Subsetting Quick Guide

The Global Ecosystem Dynamics Investigation (GEDI) instrument aboard the International Space Station (ISS) collects light detection and ranging (lidar) full waveform observations. The Level 1B Geolocated Waveform Data ([GEDI01_B](#)), Level 2A Elevation and Height Metrics Data ([GEDI02_A](#)), and Level 2B Canopy Cover and Vertical Profile Metrics Data ([GEDI02_B](#)) granules are available through [NASA's Earthdata Search](#). This quick guide demonstrates how to find and subset GEDI Version 2 granules using Earthdata Search. GEDI Version 2 data are split into sub-orbit granules and contain the spatial metadata necessary to perform spatial queries in Earthdata Search.

Instructions on how to find granules that contain data for a region of interest (ROI) and how to perform spatial and/or layer subsetting of GEDI sub-orbit granules accessed from NASA's Earthdata Search are provided below. [Earthdata Login credentials](#) are required to download GEDI data products.

NASA's Earthdata Search

Step 1: Access Earthdata Search

Open [NASA Earthdata Search](#). Sign in with Earthdata Login credentials (🔒 Earthdata Login) or [register](#) for a new account.

Step 2: Search for GEDI Version 2

Search for a GEDI Version 2 collection by entering "GEDI v002" or the dataset short name (e.g., GEDI01_B v002) into the search box in the upper left-hand corner of the page, then select the desired product from the list of matching collections. All available granules for the product will be included in the list of matching granules.

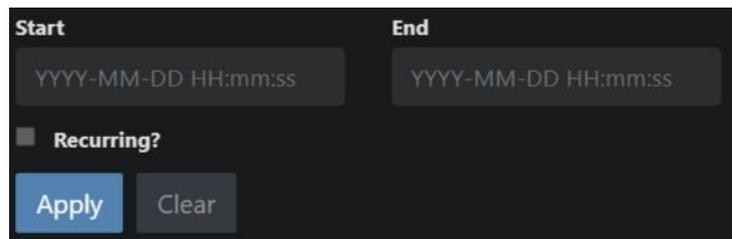
The screenshot displays the NASA Earthdata Search interface. At the top, the 'EARTHDATA SEARCH' header is visible. A search box on the left contains the text 'GEDI v002', which is highlighted with a red box. Below the search box is a sidebar with 'Filter Collections' and various categories like Features, Keywords, Platforms, Instruments, Organizations, Projects, and Processing Levels. The main content area, titled 'Matching Collections', shows four results. Each result includes a 'No image available' placeholder, the collection name, the number of granules, the start date, and a brief description. The results are: 1) 'GEDI L2A Elevation and Height Metrics Data Global Footprint Level V002' with 7,250 granules; 2) 'GEDI L2B Canopy Cover and Vertical Profile Metrics Data Global Footprint Level V002' with 2,456 granules; and 3) 'GEDI L1B Geolocated Waveform Data Global Footprint Level V002' with 3,509 granules. Each result also features a 'CUSTOMIZABLE' button and a 'GEDI02_A v002 - LP DAAC' or 'GEDI01_B v002 - LP DAAC' label. A fourth result is partially visible at the bottom.

Step 3: Perform a Spatiotemporal Search for Granules

GEDI Version 2 products can be queried by temporal and/or spatial boundaries using the

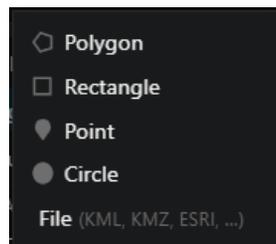
 tools below the search bar in Earthdata Search.

The temporal filter () allows for user-provided start and end date/time and will return any available granules acquired between those dates.



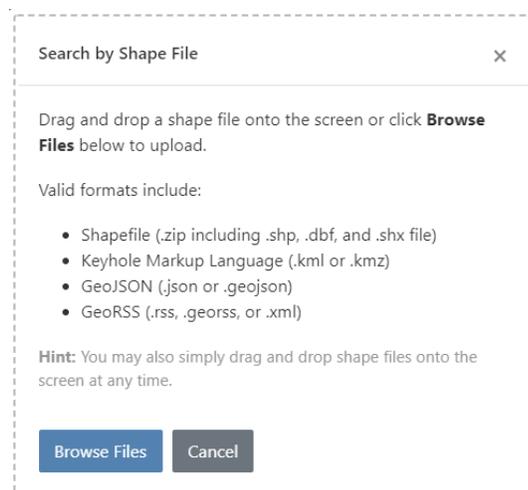
The image shows a dark-themed interface for a temporal filter. It features two input fields labeled 'Start' and 'End', both containing the placeholder text 'YYYY-MM-DD HH:mm:ss'. Below these fields is a checkbox labeled 'Recurring?'. At the bottom, there are two buttons: 'Apply' (highlighted in blue) and 'Clear'.

The spatial filter allows you to draw a polygon, circle, or rectangle region of interest to filter granules by location. Other spatial options include submitting a lat/lon point location, or uploading a KML, shapefile, GeoJSON, or GeoRSS.



The image shows a dark-themed menu for spatial filter options. It lists five options with corresponding icons: 'Polygon' (pentagon), 'Rectangle' (square), 'Point' (location pin), 'Circle' (circle), and 'File (KML, KMZ, ESRI, ...)'.

To upload a shapefile, select File from the spatial filter. In the following window either drag and drop the desired shapefile or select Browse Files to locate the shapefile, KML, GeoJSON, or GeoRSS on your computer.



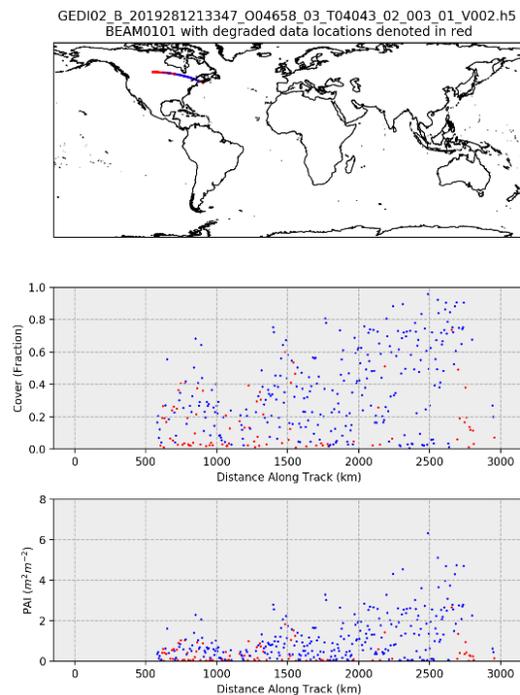
The image shows a dialog box titled 'Search by Shape File' with a close button (X) in the top right corner. The main text reads: 'Drag and drop a shape file onto the screen or click **Browse Files** below to upload.' Below this, it lists 'Valid formats include:' followed by a bulleted list: 'Shapefile (.zip including .shp, .dbf, and .shx file)', 'Keyhole Markup Language (.kml or .kmz)', 'GeoJSON (.json or .geojson)', and 'GeoRSS (.rss, .georss, or .xml)'. A 'Hint' section states: 'You may also simply drag and drop shape files onto the screen at any time.' At the bottom, there are two buttons: 'Browse Files' (highlighted in blue) and 'Cancel'.

Step 4: Selecting Granules for Download

Now that the results have been filtered to the desired temporal and spatial extent, you can see the footprints of the GEDI Version 2 sub-orbit granules intersecting your spatiotemporal query.

The screenshot displays the EarthData Search interface. On the left, there are filters for Spatial (Shape File: main_bndry.geojson), Temporal (Start/End dates), and Data Access. The main panel shows search results for 'GEDI v002' with 60 matching granules. A grid of granule cards is visible, each showing a thumbnail map, the granule ID, and its start/end times. On the right, a map of Maine shows the footprint of the selected granules as green lines across the state.

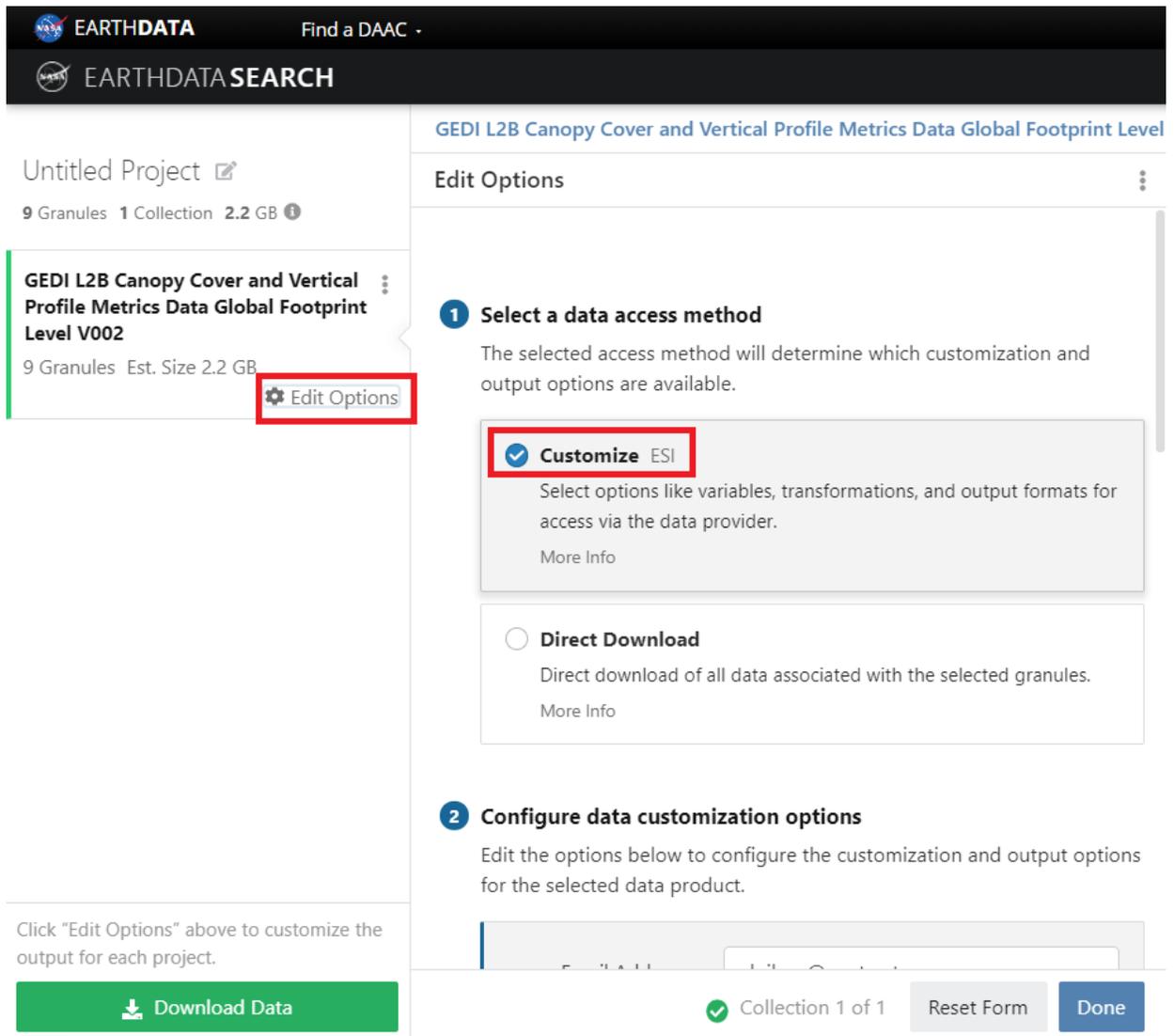
Clicking on the browse image of the granules provides a preview of each sub-orbit granule's data.



Download all granules associated with the selected collection using the button located in the bottom right-hand corner (), select specific granules to add to an order using the  button, or directly download the full granule using the  icon.

Step 5: Select Spatial and/or Layer Parameters for GEDI Granules (Spatial and Band/Layer Subsetting)

Click the green Download All button to open the download and order menu. Under the Project list on the left-hand side of the screen, click Edit Options, which will open the Edit Options tab. Under “Select a data access method,” select Customize.



The screenshot shows the EarthData Search interface. On the left, a project titled "Untitled Project" contains 9 granules and 1 collection (2.2 GB). The selected collection is "GEDI L2B Canopy Cover and Vertical Profile Metrics Data Global Footprint Level V002", which also has 9 granules and an estimated size of 2.2 GB. A red box highlights the "Edit Options" button next to this collection. Below the project list, a green "Download Data" button is visible. The main panel shows the "Edit Options" tab for the selected collection. It features two sections: "1 Select a data access method" and "2 Configure data customization options". Under the first section, the "Customize ESI" option is selected with a checkmark, while "Direct Download" is unselected. A red box highlights the "Customize ESI" option. The "Direct Download" option is also visible. The second section, "2 Configure data customization options", is partially visible. At the bottom right, there are buttons for "Collection 1 of 1", "Reset Form", and "Done".

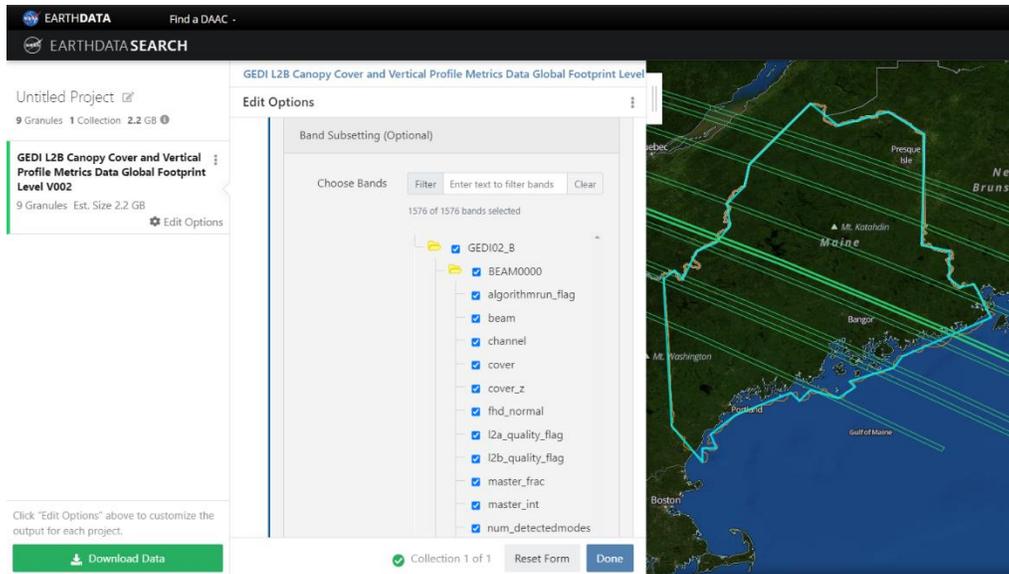
To set up the parameters for subsetting each granule to your region of interest, scroll down to the Spatial Subsetting section. Check the box next to “Click to enable” and it will populate the coordinates of the bounding box for the ROI.

The screenshot shows the EarthData Search interface. At the top, there is a header with the NASA logo, 'EARTHDATA', and a search bar containing 'Find a DAAC'. Below this is a dark navigation bar with the NASA logo and 'EARTHDATA SEARCH'. The main content area is divided into a left sidebar and a right main panel. The sidebar shows a project titled 'Untitled Project' with 9 granules, 1 collection, and 2.2 GB. Below this is a list of collections, with the selected one being 'GEDI L2B Canopy Cover and Vertical Profile Metrics Data Global Footprint Level V002', which also has 9 granules and an estimated size of 2.2 GB. An 'Edit Options' gear icon is visible next to the collection name. The main panel shows the 'GEDI L2B Canopy Cover and Vertical Profile Metrics Data Global Footprint Level' collection selected. Below the collection name is the 'Edit Options' section, which is expanded to show the 'Spatial Subsetting (Optional)' section. In this section, the 'Click to enable' checkbox is checked, and the 'Use Shapefile from Search' checkbox is unchecked. Below these checkboxes are four input fields for bounding box coordinates: North (47.45215), West (-71.08593999999998), East (-66.90234), and South (42.93456999999998).

To clip the granules to the exact boundaries of a GeoJSON or shapefile, deselect “Click to enable” and select “Use Shapefile from Search.”

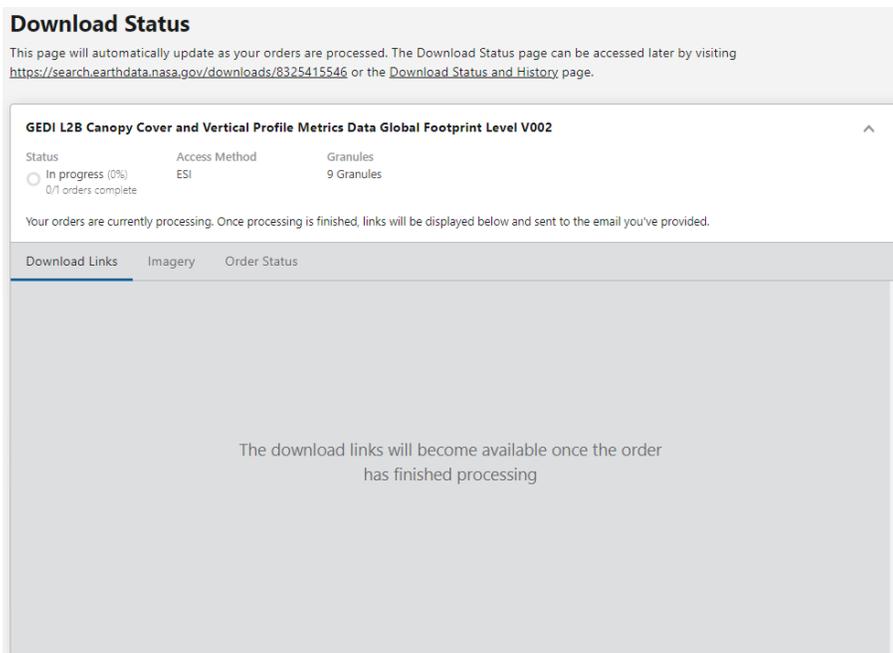
This screenshot is similar to the one above, showing the EarthData Search interface. The 'Spatial Subsetting (Optional)' section is still expanded, but the 'Click to enable' checkbox is now unchecked, and the 'Use Shapefile from Search' checkbox is checked. The same bounding box coordinates are displayed in the input fields below: North (47.45215), West (-71.08593999999998), East (-66.90234), and South (42.93456999999998).

Select specific science dataset layers to extract by scrolling down to the Band Subsetting section. Expand the directories and select the desired GEDI beams and/or layers. Additional information for each of the data layers can be found on the [GEDI01_B](#), [GEDI02_A](#), or [GEDI02_B](#) Digital Object Identifier (DOI) product landing pages.



Step 6: Place Order

After the desired parameters for spatial and/or layer subsetting have been selected, click Done to complete the custom order form then click Download Data to initiate the order. When the data request is submitted, a Download Status screen will monitor the progress of the order.



An order confirmation email is also sent to the email address associated with the Earthdata login credentials or specified in the custom order form. Check the status of the order in the [Download Status and History](#) page.

Download Status & History		
Contents	Created	Actions
GED1 L2B Canopy Cover and Vertical Profile Metrics Data Global Footprint Level V002	20 minutes ago	

Step 7: Retrieve Data

A status update email for the data processing request will be delivered when the order has completed. The order completion email contains URLs for accessing the data outputs. Note that the URLs have an expiration date and are only valid for one week.

Contact LP DAAC User Services at lpdaac@usgs.gov with any questions about the request. Be sure to reference the request ID in any correspondence.

Step 8: Download Data

Download the output files by clicking on the .zip link in the email and unzipping into a local directory. Or, click on the .html link, which goes to a page including options to download files one by one, or download a .txt file containing links to all of the output files. Automate downloading by saving the .txt file and using [DAAC2Disk](#) or [command line utilities wget and curl](#). Additionally, R or Python can be used to download data directly from the .csv file using the scripts provided in [How to Access the LP DAAC Data Pool with R](#) and [How to Access the LP DAAC Data Pool with Python](#).

Step 9: Convert GEDI Data to GeoJSON

To convert the .h5 output files from Earthdata Search to GeoJSON, use the GEDI Spatial and Band/Layer Subsetting and Export to GeoJSON ([GED1 Subsetter](#)) script. The GEDI Subsetter is a command line executable Python script that allows users to export GEDI HDF5 files as a GeoJSON file that can easily be loaded into GIS and/or remote sensing software for further visualization and analysis.